DOCUMENT RESUME

ED 400 785 IR 018 132

AUTHOR Claxton, Melba S.
TITLE Infusing Technology into the Lesson Plans of Early Childhood Preservice Teachers.
PUB DATE 15 Sep 95
NOTE 67p.; Ed.D. Practicum, Nova Southeastern University.
PUB TYPE Dissertations/Theses - Practicum Papers (043) -- Tests/Evaluation Instruments (160)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Assignments; *Computer Software Evaluation; *Computer Uses in Education; Early Childhood Education; *Educational Technology; Higher Education; Instructional Effectiveness; *Lesson Plans; *Peer Teaching; *Preservice Teacher Education; Student Attitudes; Student Journals

ABSTRACT

This practicum was designed to acquaint seven early childhood education majors with various kinds of computer hardware and software. They were required to evaluate the software for its developmental appropriateness. Additionally, their assignment was to write a minimum of two lessons using technology in their 5-day unit plans and to teach one of those lessons to their peers in the college classroom. Log in/journal notebooks for every student were designed for them to log in at least 2 hours of lab work each week, describe the kind of work completed or attempted, and report their feelings about each lab session. Also included in the notebook were records of each student's proficiency in evaluating software, using computer hardware and peripherals, and infusing technology into unit plans. During the practicum, students went on a field trip to a primary grade school where they observed children working at computers. Practicum data reveal that all seven preservice teachers adequately evaluated the software, and all students were able to use five of the six kinds of computer hardware. After meeting the number of expected lab hours, the preservice teachers completed technology assignments required in their lesson plans. Their portfolios containing evidence of this infusion of technology have been placed in the division's central vault for the perusal of other professors in the education division who wish to make similar assignments in other courses. Appendices contain the technology survey cover letter and survey; computer software evaluation form; a check list for hardware and peripherals; log in and journal sheet; and check list for infusion of technology lesson plans. (Contains 24 references.) (Author/AEF)

Infusing Technology Into the Lesson Plans of Early Childhood Preservice Teachers

by

Melba S. Claxton

Cluster 61

A Practicum I Report Presented to the Ed.D. Program in Child and Youth Studies in Partial Fulfillment of the Requirements for the Degree of Doctor of Education

NOVA SOUTHEASTERN UNIVERSITY

1995

PRACTICUM APPROVAL SHEET

This practicum took place as described.

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July 31, 1995

This practicum report was submitted by **Melba S. Claxton** under the direction of the adviser listed below. It was submitted to the Ed.D. Program in Child and Youth Studies and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Nova Southeastern University.

Approved:

9-22-95
Date of Final Approval of Report

Mary Ellen Sapp
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Acknowledgments

First of all, my sincere appreciation goes to Dr. Mary Ellen Sapp whose advice, patience, and encouragement helped me successfully complete this practicum. Without her constructive guidance from beginning to end, this practicum would have been impossible.

To my division chairperson, Dr. Kathryn Garrard, who understood the rigorous demands of full-time college teaching, committee assignments, and family responsibilities of a child in college while pursuing a higher degree in education, I give special thanks. She supported me throughout implementation of my practicum by allowing me to use the education division's technology lab as I worked with preservice teachers. In addition, I thank Professor Larry Julian, lab coordinator, who kept the lab in operation with his knowledge of hardware and software, and for his kindness in providing me a student lab assistant. My longsuffering colleague, Professor Jackie Castleman, I graciously thank for her empathy as she, too, was implementing her own practicum at the same time.

I am especially grateful to my loving family who encouraged me when I needed renewed faith in myself. My daughter, Carol Anne Claxton, my son Dr. Ralph F. Claxton, Jr., his wife, Melanie, and my mother, Mildred G. Sammons, would not allow me to give up.

TABLE OF CONTENTS

		Page
ACKNOWLEDGMENTS		iii
TABLE OF CONTENTS		iv
LIST OF TABLES		v
ABSTRACT		vii
Chapter		
I	INTRODUCTION	1
	Description of Community	1
	Writer's Work Setting and Role	2
II	STUDY OF THE PROBLEM	5
	Description of the Problem	5
	Documentation of the Problem	6
	Analysis of Causes	7
	Relationship of Problem to the Literature	8
III	ANTICIPATED OUTCOMES AND EVALUATION INSTRUMENTS	12
	Goals	12
	Expectations	12
	Measurement of Outcomes	13
IV	SOLUTION STRATEGY	16
	Discussion and Evaluation of Solutions	16
	Description and Justification for Chosen Solutions	22
	Report of Action Taken	25

TABLE OF CONTENTS (continued)

		Page
V	RESULTS, DISCUSSION, AND RECOMMENDATIONS	35
	Summary of the Problem	35
	Results	36
	Discussion	38
	Recommendations	41
	Dissemination	42
REFERENCES		43
Appendices		
A	COVER LETTER FOR TECHNOLOGY SURVEY	46
B	TECHNOLOGY SURVEY FOR EARLY CHILDHOOD MAJORS	48
C	COMPUTER SOFTWARE EVALUATION FORM	51
D	CHECK LIST FOR HARDWARE AND PERIPHERALS	54
E	LOG IN AND JOURNAL SHEET	56
F	CHECK LIST FOR INFUSION OF TECHNOLOGY INTO LESSON PLANS	58

LIST OF TABLES

		Page
Table 1	Infusion of Technology	38

ABSTRACT

Infusing Technology Into Early Childhood Preservice Teachers' Lesson Plans. Claxton, Melba S., 1995: Practicum Report, Nova Southeastern University, Ed.D. Program in Child and Youth Studies. Preservice Teacher Technology Training/Computer-Assisted Instruction/Early Childhood Language Arts/Preservice Teacher Field Experiences.

This practicum was designed to acquaint seven early childhood education majors with various kinds of computer hardware and software. They were required to evaluate the software for its developmental appropriateness. Additionally, their assignment was to write a minimum of two lessons using technology in their 5-day unit plans and to teach one of those lessons to their peers in the college classroom.

The writer designed log in/journal notebooks for every student into which students logged in at least 2 hours of lab work each week, described the kind of work completed or attempted, and reported their feelings about each lab session. Also included in the notebook were records of each student's proficiency in evaluating software, using computer hardware and peripherals, and infusing technology into unit plans. During the practicum, students went on a field trip to a primary grade school where they observed children working at computers.

Practicum data reveal that all seven preservice teachers adequately evaluated the software, and all students were able to use five of the six kinds of computer hardware. After meeting the number of expected lab hours, the preservice teachers completed technology assignments required in their lesson plans. Their portfolios containing evidence of this infusion of technology have been placed in the division's central vault for the perusal of other professors in the education division who wish to make similar assignments in other courses.

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Melba S. Claxton (signature)

CHAPTER I

INTRODUCTION

Description of Community

The community in which this work setting is located is in the rural southeast where most people earn their income from farming, garment factory work, and retailing. Most lower-middle class people travel to nearby towns to work in these factories and retail stores. There are fewer professionals such as bankers, attorneys, educators, and clergymen than common laborers. The county has only one physician and two pharmacists.

This small community has been forced into serious struggles with poverty primarily because local businesses no longer flourish, and farming is a gamble with which only the big-scale farmer can cope. The 1990 census (Bachtel, 1993) noted a doubled amount of average income per family in 1979 from $10,156 to $20,054 in 1989, an increase which could not even keep up with spiraling cost of living increases. During these two decades, female heads of household with children under the age of 18 climbed from 6.8% to 11.2 %. Aid to Families of Dependent Children (AFDC) caseloads increased 34.4% from 1990 to 1992. Consequently, 24.5% of the county's population live below the poverty level.

In regard to educational attainment, the census reported that 42.6% of the county's population did not complete high school. The census further reveals that 37.8% of children in grades kindergarten through five (K-5) failed grades during the 1991-92 term. In high school the failure rate, according to the census, was 43.2% of the total high school enrollment.

Poverty prevails and literacy is lacking. Low self-esteem is a major problem that relates to the community's economic plight, and since poverty appears to breed more poverty, a big number of community residents are imprisoned in a lifestyle that offers little more than a meager subsistence.

Writer's Work Setting and Role

The work setting is the education division of a private, 4-year liberal arts college whose enrollment of slightly more than 2,200 students includes approximately 500 education majors of which 125 are in early childhood education. Located in a rural southeastern part of the United States, the college offers eight baccalaureate degrees. It is affiliated with a major Protestant denomination and operates on an annual budget of over $5 million. Fifty-four full-time faculty members are employed here.

Designed for lectures and demonstrations, the immediate work setting has four lecture classrooms, two laboratories, and one classroom/science laboratory all of which are connected to the faculty suite of 14 offices by the division secretary's office and a reception area. Classrooms will accommodate 15 to 35 students; the curriculum lab has a capacity of approximately 60 people;

and the technology lab has 10 work stations. The technology lab has four IBM and four Macintosh computer stations, a scanner, printer, CD-ROM, LCD panel equipment, FAX/modem equipment, software storage cabinet, an assortment of software, and a lab assistant's work area. In the curriculum lab is an IBM word processor with printer, used for the technology lab overflow, three TV/VCRs, and two filmstrip projectors. Each classroom is equipped with an overhead projector. For the most part, practicum participants will spend time in one of the classrooms, the technology lab, and curriculum lab.

In addition to the writer, three basic categories of people will be involved in this practicum. Early childhood preservice teachers in the Language Arts Teaching Methods and Teaching of Reading courses, whose total enrollment is eight, will work with the part-time technology lab coordinator and with four work study lab assistants from 10 A. M. to 8 P. M. Monday through Thursday and by special appointment on Fridays and Saturdays.

The writer whose position in the work setting is Assistant Professor of Education teaches 300-400 level courses in children's literature, the teaching of reading, early childhood language arts and social studies methods, and a course for teachers of the exceptional child. She is also an academic advisor for 69 early childhood education majors from freshman to senior status and is a member of the freshman orientation committee, assisting with special weekend orientation advisement sessions once each quarter.

As one of the field experiences supervisors, the writer travels to schools

within a 50-mile radius of the college to work with 10 to 20 student teachers and practicum students each quarter. She is one of the advisors for the education division's state-affiliated organizations for professional educators that provide networking with inservice teachers and administrators and give legislative input on a statewide level. The writer serves as recording secretary for a policy-making committee in the education division whose primary task is not only determining student admission to the teacher education program but also making recommendations for curriculum additions and changes. As a member of this committee, the writer is responsible for assisting with administration of teacher education essays once each quarter to all preservice teachers, distributing these 50 to 60 essays to the professional committee, and tallying and reporting pass/delay essays to the committee chairperson.

The writer, who is a full-time faculty member for 7 years in this work setting's humanities division and is teaching her seventh year in the education division in the same general work setting, also serves on a search committee. Needless to say, the writer's role in the practicum setting is enhanced by these opportunities to perceive the needs of students in the education division.

CHAPTER II

STUDY OF THE PROBLEM

Description of the Problem

In the writer's setting and in education conferences and workshops throughout the state, the problem of inadequate knowledge and use of technology for preservice and inservice teachers has been discussed as a serious matter that must be addressed immediately. Every teacher, these educators concurred, needs to be well prepared to meet the demands of incorporating 21st-century technology in their teaching. The chairperson of this writer's setting was not optimistic about the present state of affairs, reporting that the education division was already far behind other schools of education in technology literacy.

As a major move toward seeking this goal, early childhood preservice teachers in the writer's work setting felt a need to be taught how to write developmentally-appropriate and high quality, state-of-the-art computer technology applications into their language arts methods and teaching of reading lessons plans. For their demonstration lessons and in field experiences, they expressed a need to demonstrate their ability to use peripherals and software that would facilitate and enhance learning. Although

these students were required to take a 2-hour credit basic skills course in computers taught by a member of the business division, they were not taught how to apply the course specifically to early childhood classroom instruction.

Documentation of the Problem

Evidence that these students were not infusing technology into their lesson plans was abundant. This writer's examination of 27 copies of preservice teachers' language arts methods and teaching of reading lesson plans, kept in the central vault of the education division, revealed that none of these students had used hardware or software in their written plans. The writer also reviewed 16 videotapes of preservice teachers' demonstration lessons, finding no indication of technology infusion except for occasional uses of the overhead projector and TV/VCR. These tapes represented demonstration lessons presented by the writer's students and by students of other professors.

To further investigate the problem, the writer conducted a survey with early childhood majors concerning experience with computers, peripherals, and software (see Appendixes A and B). Of the 37 respondents, 18 indicated either "below average" or "none" concerning their knowledge of computer applications. Thirty-one of these 37 respondents revealed positive attitudes either to a "significant degree" or "highly significant degree" concerning the benefits of technology applications to enhance instruction, further justifying the need for preservice teacher technology training.

Analysis of Causes

Causes of the problem, first of all, resided within education professors and their preservice teachers in the college classroom. In addition, these education majors were not being given computer hardware and software exposure from their inservice teacher supervisors in field experiences.

Of the eight full-time education professors, only one demonstrated an adequate understanding of computers and peripherals, and none were versed in instructing education majors on how to infuse software into their lesson plans. To exacerbate that problem, not until May of 1994 was there sufficient funding for the initial development of a technology lab and funding to hire work student students to assist education majors and to provide some faculty awareness of lab components. The part-time volunteer coordinator had the task of soliciting software orders from uninformed and inexperienced education faculty, a job that had delayed putting the lab to full use except for basic word processing. The take-off was further slowed as professors in this understaffed work setting were expending much energy and many overtime hours meeting demands of the state's program approval revisions. Because program approval had to be completed within the next 2 years before the state commission made on-site visits, time to focus on high-tech methods of providing preservice teachers with hands-on computer and peripherals instruction was not available. Education majors had not been encouraged to teach reading and the other language arts with computers, to guide expository, technical, and narrative

writing experiences, to encourage critical thinking and problem solving skills, and to provide students cooperative learning opportunities that computers offer.

The majority of these early childhood majors, a high percentage of which were nontraditional students (see Appendix B), have always lived in low income bracket, rural environments where a mere basic lifestyle exists. Only 8 of the 37 respondents on the technology survey reported ownership of personal computers; therefore, the writer could reasonably assume that these students were reluctant to explore independently almost anything about technology. At any rate, these older adults seemed intimidated by and fearful of this "new fangled" delivery method of teaching and learning.

Finally, most inservice teachers involved in field experience assignments were not computer literate because of their not having adequate resources to enhance their technology literacy. They had no release time to learn about computers and software and held the outdated mindset that computers would eliminate the " personal touch." Because of their attitudes, it appeared that the one and only computer in each of their classrooms would continue doing no more than catch dust. Thus, preservice teachers would also suffer the unfortunate consequences.

Relationship of Problem to the Literature

A review of the literature written during the past 10 years explicitly revealed a need for schools of education across this country and in other countries to improve their preservice teacher technology training. One major

concern was that a worldwide lag in high-tech training would set communities, states, and nations back several decades in development. Keeping in step with local and global business, politics, and society in the next century exacts a tremendous responsibility on schools of education, the literature reported.

As early as 1983, Rodrigues, a professor in a southwestern university, was alerted to the need for computer applications to be taught in schools of education. He acknowledged that preservice teachers were entering a period when traditional teaching strategies would neither challenge the gifted nor support the disabled learner. Later, Turner (1989) noted that a small college in the northeast feared that its preservice teachers were not being prepared to use computers and peripherals. He felt that education majors needed extended high quality exposure to and practice with technology in order to learn how to integrate all academic disciplines and teach a curriculum somewhat like a coat without seams.

Furthermore, other researchers (Bosco, Byrne, Dunlap, Gollnick, Rusche, Tucker, and Uhlig,1987) noted that colleges of education had too long been reluctant to provide their preservice teachers with knowledge for and skill in using high-tech teaching equipment and materials because of negative attitudes of college administrators. The first people to get on the team should be administrators, more specifically the deans.

At a midwestern university, Harrington (1993) explored the undeniable fact that because a global society would never again be free of the need for

advanced technology, colleges of education should get serious about providing expert teacher training in technology applications. Multicultural education is a necessary survival strategy, he added, and a highly technological world can bring far expanding and nearby regions and ethnic groups together for survival and enjoyment. Budin, Kendall, and Lengel (1986) found that social studies, a topical area related to the language arts, could be more effectively addressed through CD-ROM software than through the textbook. In grades four and five, they disclosed, the link up of language arts and social studies can be improved through process writing on the word processor.

Further research reported that many European and Asian countries are ahead of the United States in technology training. In one European country, the Teacher Education Survey/Initial Teacher Training Education (TES/ITTE) , conducted by Heppell, Davis, Alderson, Heppell, Coultas, Higgins, and Govier (1991) indicated that lack of teacher training in technology has hindered marketability of new teachers. In this writer's setting, there has been a flood of teachers seeking jobs within a 50- to 60-mile radius. Competition for these jobs has been aggressive. Heppell et al. have made valid assertions that preservice teachers should be among the first professionals to stay abreast of technological advances in delivering education today so that as inservice teachers they will have more than theory to apply to their profession. Education majors need quality hands-on experiences with computers and software, they concluded.

To make a different but significant point, Rose and Myer (1994) reported voices of ill-informed Platos who have impeded the advancement of technology in the language arts classroom for many years. These Platos, they continued, perceive computers as detrimental to the development of good orators, readers, and writers. To the contrary, computer literate educators would not let this happen since they would discover innovative ways for computers to improve one's speaking, reading, writing, and listening skills.

Although some college administrators and a few "hard to break the mold" classroom teachers still feel that computers are faddish toys which will eventually fade into the past, researchers stand firmly on their own studies which support technology applications in schools of education. They believe that technology offers effective and efficient teaching strategies necessary for keeping education in sync with local and global communities. Administrators must be willing to provide the means for installing technology hardware and software. They must also allow release time for faculty members in schools of education and public school classrooms to train for state-of-the-art instructional methods of teaching. They must budget for updating their equipment.

CHAPTER III

ANTICIPATED OUTCOMES AND EVALUATION INSTRUMENTS

Goals

The primary goals of this practicum were as follows:

1. Preservice teachers will gain knowledge about kinds of computer hardware and software which they can infuse into the Language Arts Teaching Methods and Teaching of Reading courses.

2. The practicum will demonstrate to college administrators that these preservice teachers' knowledge and applications of computer technology will make learning more meaningful and interesting for students in grades kindergarten through five (K-5).

Expectations

As a result of implementing this practicum, five outcomes were expected.

1. All seven preservice teachers will gain knowledge about kinds of computer hardware and software which they can infuse into the Language Arts Teaching Methods and Teaching of Reading courses.

2. All seven participants will demonstrate ability to use the six kinds of computer hardware and peripherals listed on the technology needs survey.

3. All seven early childhood preservice teachers will be motivated and trained to infuse high quality computer technology in their 5-day written lesson

plans.

4. From their 5-day lesson plans, all seven education majors are expected to teach to their peers one lesson which demonstrates their ability to use computer hardware and software as instructional tools for the language arts.

5. Each of the seven participants' demonstrations of computer applications, directly related to the Language Arts Teaching Methods and Teaching of Reading courses, will be a starting point to convince college administrators that these preservice teachers can improve their quality of teaching through the innovative use of technology.

Measurement of Outcomes

For Outcome 1, the evaluation tool was a computer software evaluation form (see Appendix C). After explaining how to use this form, the writer required all practicum participants to record their evaluations of three pieces of language arts-related software which they had pulled from the education division technology lab files. These forms were placed in the students' portfolios and kept in the lab during the practicum.

Preservice teachers had to identify developmentally-appropriate software for students in grades kindergarten through five (K-5) before they could choose it for use in their teaching units. Therefore, the standard of achievement was that these education majors could distinguish between quality software which would help teach their objectives in each day's plans and in software which

provided only busy work.

For Outcome 2, the writer set up learning stations containing five of the six kinds of computer hardware and peripherals listed on the technology needs survey. The FAX/Modem was to be used but was not installed during the practicum. The evaluation tool was a check list kept in the student's portfolio (see Appendix D). Participants had to demonstrate their operational skills of these items; however, if any failed to show proficiency in using any items, the writer was prepared to work individually with the student(s) until skills were mastered.

For Outcome 3, the writer checked student records every week by examining each log in time sheet to see how the student had progressed. The time sheet had to be initialed by either the lab assistant or practicum writer as verification of the student's two hours of lab work each week. In the student's journal where all lab records were kept, students wrote brief comments about each week's lab experiences. These narratives served as an evaluation tool for Outcome 3 as students planned and developed the 5-day unit. A check list was provided to indicate inclusion of at least two developmentally-appropriate computer applications in the written plan (see Appendix F).

The standard of achievement for Outcome 3 was that student enthusiasm and motivation concerning technology infusion in lesson plans would be reflected in the student's weekly narratives and would result in a score of

"average" or "above average" in written plans.

For Outcome 4, the evaluation tool was a check list indicating if the student included computer hardware applications and software in the demonstration lesson (see Appendix F). One lesson was videotaped to further verify that the student included technology applications. As a standard of evaluation, the student had to have all "yes" responses checked on the list as well as either "average" or "above average" marked to indicate that developmentally-appropriate computer applications were included in the demonstration lesson.

For Outcome 5, the evaluation tool was conducted through analysis of student portfolios and the videotaped demonstration lessons which were made available for examination of college administrators (i.e. education division chairperson, academic dean, etc.). Each student was expected to successfully prepare the lesson plan as prescribed by the practicum writer. He or she must also have successfully taught one demonstration lesson using computer applications to enhance the preservice teacher's teaching strategies and to accommodate the learning styles of students in grades kindergarten through five.

CHAPTER IV

SOLUTION STRATEGY

Discussion and Evaluation of Solutions

The literature offered several viable solutions that schools of education can provide early childhood majors concerning knowledge and use of technology in their preservice experiences. Some basic ideas were that (a) schools of education should require a technology proficiency exam for all education majors before conferring them the baccalaureate degree, (b) evaluation of hardware and software become a prerequisite for their technology applications, (c) preservice teachers choose advanced technology courses as electives, (d) advanced computer applications workshops be designed for the student who is earning the 4-year degree, and (e) schools of education cooperate with college and public school administrators in developing partnerships with states, nations, and if possible, international agencies for grant funding. Corporate businesses would certainly be considered.

Prince (1983) noted that is was not until the late 1980s that colleges of education initiated courses for preservice early childhood majors to help teachers use the computer as "...a tutor, tool, and tutee" (p. 6). Turner (1989) reported that schools of education were taking a major part of the blame for the slow move of technology integration. The majority of those who took part failed

to include technology specifically designed for the language arts methods and subject courses of early chilldhood majors.. She urged colleges to require technology training for preservice teachers in order to make the educators more desirable and marketable for demands of 21st-century education. Nicklin (1992) suggested that technology be integrated into teacher course work and that research be conducted to show teachers the value of teaching with computers. She continued that "23 states and the District of Columbia require some or all new teachers to show proficiency in computer use" (p. A9), and urged that students be taught by precept. In 1991, she reported, the National Education Association (NEA) had set a goal of having computers in every elementary and high school; consequently, the opportunity to demonstrate good use of technology and positive attitudes by precept would be enhanced. She added that an Illinois university requires all of its education majors to know how to plan lessons that use computers. Education majors at that university must pass a computer proficiency exam before graduating. The writer also views this as an essential requirement.

Shrum (1991) encouraged technology education for new teachers to enrich teaching and learning. Better ways to deliver education are depending on positive mindsets in a "new information age" and the beginning point must be in schools of education, he noted. This writer believes that the college classroom is the setting where future teachers need to shed outdated traditional notions about the ugly, fearful side of computers. Educators who fear that the

machine will take the place of the warm body or who perceive the computer as a device for creating more work for the teacher are not being realistic. The college classroom is the logical and ideal place for students to learn how to be selective with developmentally-appropriate software. Therefore, this writer's work setting must teach students how to evaluate software before students write technology components into their lesson plans. Furthermore, it is expected that preservice teachers will take their knowledge and enthusiasm into the public school classroom for other teachers to emulate.

Piper (1994) and Bakker and Piper (1994) reported that colleges must teach students to evaluate and select software. They continued that evaluations should take place in the lab or classroom environment so that teachers can try out software and not simply read about it. By following some of their evaluation strategies, they concluded, even the novice can do an adequate job. Their criteria for the California project were that software conform to (1) curriculum match, (2) instruction design, (3) accurate, thorough, and current content, (4) interest, and (5) technical quality.

To increase effectiveness in the classroom, preservice teachers can enrich their own learning with technology solutions (Anderson-Inman, Horney, Chen, & Lewin, 1994). Hands-on experiences are the most meaningful, according to Spencer (1994), who added that training classes, namely technology workshops, should have a minimum of eight people so that cooperative learning can take place. He noted that for deeper conceptual

understanding, workshops should allow teachers to feel comfortable with the equipment as they learn how each component works with the other. Spencer presented an applicable solution for this practicum.

Reed and Palumbo (1992) and Harrington (1993) concurred that higher order thinking skills can be developed with computers. After a 16-week study of 12 undergraduate students, Reed and Palumbo saw a significant increase in their students' problem solving techniques with microcomputers. They added that once students have acquired software evaluation skills, they need to start developing their own software. In this writer's work setting, early childhood majors need a beginning course in technology which specifically applies to lesson plan infusion. If advanced courses do not fit into their programs of study, at computer workshops they could learn how to prepare software programs. Experimenting with problem solving techniques on the computer should become a challenge to them.

One solution to the problem as it existed in this writer's work setting was keeping up to date with advances in technology that apply to schools of education and being ready to make intelligent purchases when resources became available. Today's students need to practice new ways to solve old problems and clever methods of coping with different kinds of 21st-century problems that have not been effectively dealt with before. They should not be afraid to use all available resources, to experiment, to practice, to appreciate success, and to overcome defeat.

Bosco et al. (1987) made some significant remarks regarding advanced computer applications which can offer effective implementation of technology in schools of education. Most astounding was their comment that colleges of education must view themselves as centers of research for development of education technologies. In so doing, they added, preservice teachers will learn how to adjust their teaching to various learning styles and modalities in language arts instruction. They further contended that education majors must be convinced that technology "is not a passing fancy" (p. 25). Although this writer's work setting is not a research college, implications from Bosco et al. create a challenge which this practicum should address. Professors and preservice teachers can work together in their own kinds of research. Though it might not always be of the absolute and sophisticated, clinical nature, it can make meaningful and worthwhile implications to strengthen teaching skills.

A solution not too remote for this practicum's setting is virtual village. According to Kurzweil (1993), virtual village will help to integrate the world's cultures. He observed that conventional textbooks used today do not keep up with the changing pace of information access about people, customs, lifestyles, likes and dislikes. Just as the information superhighway will replace today's antiquated telephone systems, so will the motley collection of old computers such as the Apple IIe be replaced with more state-of-the-art equipment, he concluded. Global survival depends on a healthy perspective of cultural pluralism. Preservice teachers can solve some problems of cultural

ignorance through such technology applications as virtual village.

Another solution to the problem is to let public school and college administrators know that teachers are willing to work with local, state, and national communications companies. About 20 years ago this writer was as excited as her third graders who talked on a conference-type telephone call to other third grade "pen pals" in Iowa. At that time this conference was a state-of-the-art arrangement made by Southern Bell. Today's updated communication techniques are for the asking from these communications companies. The competitive market in telecommunications is on the cutting edge of technology, another viable solution to infusing technology into classroom instruction.

A project conducted by Curtin, Cochrane, Avila, Adams, Kasper, and Webbena (1994), in which two Texas schools collaborated to become more effective citizens in a technology-intensive society served as an example of a successful solution to teacher training technology. One school district, a university, an education service center, and a telephone company worked together to train preservice and inservice teachers. Equipment included "a telephone, four computers, a printer, a laserdisc player, television connections, microphones, speakers, handphones, video digitizing boards, modems, and CD-ROM drives that were all networked with Ethernet software" (pp.77-78). University students met with a training consultant one time a week for 2 hours. The project, Curtin et al. reported, helped preservice and inservice teachers unite as they assisted young children on how to write, think, and improve

interpersonal skills. Preservice teacher training in the field was effectively linked to college classroom lectures and theory, they concluded.

Description of and Justification for Chosen Solutions

A university in eastern Michigan solved its problem of connecting technology with teaching reading and writing (Moore, 1991). A professor at the university, Moore reported how preservice teachers and graduate education majors participated in electronic dialoguing with a public school through a grant provided by a computing center. Electronic dialoguing allowed participants to interact with text and to be socially involved with their partners. Nicklin (1992) reported that not only did preservice teachers in an Illinois state university project find more interest in technology at the university but also a much higher percentage of education faculty required their students to use computer applications in their lesson plans. Especially in language arts was this project effective. Workshops made possible by a grant brought this university's dream to reality.

Heppell et al. (1991) reported that the United Kingdom is effectively addressing its serious approach to technical training in teacher education programs. Their TES/ITTE report revealed that over half of the training colleges in the United Kingdom have a formal policy for teachers' acquiring technology training. The survey showed that 95% have revised their existing policies, almost one-half offer advance courses, and 69% have a fixed level of competency for beginning teachers. They feel that schools of education must

continue to demand stringent exit requirements concerning technology in order to keep its education majors in step with worldwide economic competition, and thus, survival in the next century.

In this writer's setting, job placement for teachers in rural southeast Georgia is difficult. Since a large percentage of education majors, especially those in early childhood education, are nontraditional students not at liberty to move to other parts of the state for teaching jobs, their careers are often diverted to lower income education-related fields or even delayed because of a low turnover in hiring. However, if these new teachers graduate with a high level of technology expertise, they can demonstrate their exceptional worth not only to youngsters eager to learn but also to the present inservice teachers who admit that they are afraid of technology and do not know how to use it.

During the past 3 years as this writer has visited preservice teachers in their field experiences, she has heard media specialists in underserved rural schools admit that although they have computer hardware and software, they are not trained to use it and they are afraid to try. One solution to this problem is that colleges prepare its education majors by training them how to make technology applications. There are no computer specialists in schools where these majors hope to teach in the area 50 to 60 miles away from the practicum setting . At this point the state does not offer or require a degree in technology education. This important task of teaching inservice teachers technology in public schools can be done by beginning teachers if no one

else will do it.

The state's governor announced this year that a significant amount of lottery monies will fund technology in public schools. Well-informed, new teachers could conduct workshops in their school districts. Even if the state education department cannot fund these workshops, state and national business agencies are ready to spend their money with education improvement grants From these grants, teachers could be given stipends for their work in technology applications. Who would benefit the most in the long run? Of course, children in the classrooms would.

Although this writer found it impossible at this time to try all of the solutions offered in the literature such as implementing electronic dialoguing, traveling the superhighway, and effecting curriculum changes that would require all education majors to achieve a fixed level of technology competency before completing the baccalaureate degree, the most immediate and viable solution is introducing preservice early childhood majors to technology applications in their unit lesson plans. Certainly this has made a powerful and productive beginning and opens the way for more solutions to the problem including curriculum revisions in the near future.

The writer was prepared to work alongside preservice teachers involved in the practicum and to provide encouragement to some whose spirits had diminished and energy was challenged. These students have had to share their time caring for their families, traveling to and from the college

campus about 100 miles round trip, and managing a demanding college schedule. To keep enthusiasm high, the writer worked hard to maintain healthy student morale and to develop positive student attitudes.

Report of Action Taken

The practicum was implemented as planned in the weekly time schedule. An overview of the plan stated below is followed by a more specific explanation of implementation.

To begin with, one student withdrew from classes early in the practicum. Eight had enrolled. One advantage of this small class was that the writer was able to give extra individual attention to problems such as student uncertainties about choosing age-appropriate and content-specific software. Because most of these students had had no prior experience with computers, at the outset they needed one-on-one instruction. They knew nothing about a scanner or LCD panel and had never used a CD-ROM; therefore, instruction began at ground zero.

Although a lab assistant supervised lab time one 2-hour period each week for practicum participants only, she and other assistants kept the lab open Monday through Thursday for 8 hours and on Friday for 4 morning hours. This lab is restricted to education majors, so practicum participants were allowed extra lab time during these hours. This was helpful, especially during the first half of the practicum because students needed extended time to examine software, evaluate it, and experiment with computer hardware.

The practicum was not without its downside. First of all, there was not sufficient age-appropriate and content-specific software. The writer purchased two suitable software programs and borrowed some from local schools which had not used them and were happy to share. Public domain shareware borrowed from a resource center seemed a promising solution to the problem; however, this software was not compatible with the IBM and Macintosh computers in the technology lab. One student borrowed software from the school where she had been assigned her language arts field experience for the quarter only to deal with a software virus. Despite its annoyance, this was a valuable learning experience for all seven practicum participants.

The writer's journal indicated a frequent problem with loading one of the CD-ROMs. There was a certain way to load it, but it was not easy and not every practicum participant was able to do it. In their log in/journal notebooks some students expressed frustration about not being able to use a CD-ROM at all some days since there was only one other in the lab. Had the class been larger, this would have created a major problem; however, student journal entries revealed that they solved this problem very well and were satisfied with their success.

Hannaford (1991) reported that attitudes about the use of classroom computers are more positive in preservice teachers than in inservice teachers. At the outset of the practicum the biggest roadblock was convincing practicum participants that they could indeed infuse quality technology into their language

arts lesson plans. They required motivation and encouragement because they were fearful of attacking uncharted seas. Although these students had written 5-day units before, they had never written them this way. To begin with, the practicum writer went through several brainstorming episodes with students since they had no idea how or where to start. She had individual weekly conferences with students to guide them through the lesson plan process. Finally, she demonstrated a language arts lesson appropriate for third graders with the use of a CD-ROM activity based on The Velveteen Rabbit. At that point, students seemed to have more confidence in themselves which supported Hannaford's premise related to teacher attitudes, and made a bold statement about unskilled, untrained, and uninformed inservice teachers whose experiences with technology, if any, were not productive or satisfying. That fact became more apparent when, during her field experience, one practicum student reported actually "turning on" her supervising teacher to using computer applications with the teacher's first grade public school students. The education major's contagion was powerful enough to create an exciting spinoff for the practicum which encouraged the practicum writer and practicum participants. It became apparent that inservice teachers are receptive to ideas of preservice teachers.

Hill and Hess (1991) noted that "learning about computers is labor intensive" (p. 93) but added that public schools, in cooperation with schools of education, can reduce the work load. The practicum writer believes that most

public school administrators are amenable to technology instruction for their teachers but are reluctant to ask teachers to squeeze one more thing into their overcrowded days. Confirming that preservice teachers can be effective technology teachers and role models was evident when another practicum participant told how, in her field experience setting, she and the media center director had established a pleasant relationship and developed a common interest in technology for teachers. These two adults agreed to maintain a reciprocal mentorship by keeping up with the newest hardware, learning how to use it, selecting appropriate software, and sharing their ideas.

Practicum participants benefited from the field trip to a primary school in a nearby city school system. Although the trip was planned for visits in classrooms and the media center, the visit was confined to the media center due to a last minute change in the school's schedule. This was disappointing to all seven practicum students because they wanted to see how networked computers operate in the classroom. Several primary grade students were working at media center computer terminals, so the group worked with a few students in second and third grades. Preservice teachers spent 2 hours in the center, first touring the facility, and then trying out the school's newest software, some of which let the learner choose from four languages: Spanish, French, German, or English. Since these education majors are required to take three quarters of a foreign language, they got to practice their skills in a language other than English.

Trials and triumphs raged throughout the practicum, but after all, students met their final deadlines and completed their technology-rich lesson plans. They were ready to teach the demonstration lessons.

Month 1: Week 1.

The writer confirmed with the division chairperson that the practicum was ready to implement. The lab coordinator reserved the technology lab 2 hours a week each Wednesday for practicum participants only. The writer and work study assistant would work with students. The writer distributed the course syllabi for Language Arts Teaching Methods and The Teaching of Reading courses and explained requirements for the technology practicum.

Even though these students had prepared at least one 5-day unit lesson plan at this point in the teacher preparation program, they had never been required to infuse into those plans any kind of electronic media aside from video tapes, filmstrips, and overhead transparencies. Their faces registered ambivalence: a mixture of enthusiasm and excitement but also anxiety.

Week 2.

Although the writer had distributed a technology needs survey (see Appendix B) to a large number of early childhood education majors earlier in the academic year, she redistributed the survey to pinpoint areas of need for these students. The needs were still obvious. Also this week the technology lab coordinator, a full-time professor in middle grades education, spoke to the students, giving an overview of lab policies. One student had to withdraw from

classes at this time, leaving seven to complete the practicum.

Week 3.

This was lab orientation week. The writer provided each practicum participant a specially prepared, spiral bound log in/journal notebook which also served as a guide for lab orientation. The writer felt that the more practice one gets with computers while ideas are fresh on the mind, the better the transfer is likely to be in a hands-on situation. Therefore, in the remaining hour students worked in pairs, selected a piece of software, and booted up programs. Pairing off students seemed to provide a less threatening environment.

Week 4.

Three software evaluation forms were given to each student (see Appendix C). The evaluation first called for general information such as the instructional technique, hardware requirements, and peripheral equipment needed. More specifically the student was asked to evaluate content of the program, presentation of content, visual appearance, and program operation. The writer expected each student to be able to interpret the forms but realized right away that some students needed help. In order to encourage positive feelings about the practicum, she helped these students with the first form but let them complete the other two independently. Since not all students completed their forms during the two hours of lab, some had to return the following day.

Month 2: Week 1.

Students were introduced to five kinds of hardware and peripherals listed on the check list (see Appendix D) and were encouraged to try out the scanner, printer, and CD-ROM. For demonstration purposes, the lab coordinator set up the LCD panel in the classroom and helped one student at a time with it. The FAX/Modem had not been installed; in fact, it was never installed.

This was the week students started writing objectives for their units. While three students worked with the three peripherals, the others worked independently on lesson plans. Then they rotated from writing objectives to examining peripherals..

This was probably the most stressful and energy-consuming week of the practicum. Students had chosen software they liked but could not write appropriate objectives. What they considered objectives turned out the be nothing more than activities. An even greater challenge was that lesson plans had to be literature based.

Week 2.

This seemed an appropriate time for a field trip. So the class traveled to an affluent public school in a city system where students spent 2 hours in the media center working with primary grade students, the school's media specialist, and with each other. This was one of the highlights of the practicum for it was here that these education majors were able to fit the "real" teaching world into the objectives they had struggled with earlier. Since that school had

received a technology grant earlier in the year, their software inventory was large and varied, and the center was generous in allowing us to check out some of their software. What an enlightening and uplifting experience the visit was!

Week 3.

Revitalized by the field trip, students continued working on their rough drafts and revising them. They explored many developmentally-appropriate programs before they started on final revisions, while the practicum writer remained in the background as much as possible. The two previous weeks had been laden with one-on-one conferencing.

One student commented in her journal about how afraid of computers she had been until now. She confessed that up to this point she had relied too much on her peers for support. Happily, she recorded in her journal, "I am on top of the world. I even went into another software program today."

Week 4.

By the end of this week, students had completed their final drafts. These were done on word processors in the lab with which, at this point, most students were familiar. General criteria for writing the unit were the same as students had always met (i.e., providing for different levels of learners, indicating use of tactile, auditory, and visual modalities, including six instructional strategies, etc.), except that technology infusion was a must in at least two of the five lessons.

Participants appeared not as nervous, uneasy, or anxious as they had earlier. As David Thornburg noted in Betts' (1994) published interview, learners will take responsibility for their learning in the new information age. These students were now enjoying the success of taking charge of their own learning and solving problems like they had never before.

Month 3: Week 1.

By now students seemed knowledgeable of and comfortable with use of peripherals. The writer set up work stations for five kinds of computer hardware and peripherals, excluding the FAX/Modem which still was not ready for use. She scheduled two 2-hour periods this week for this performance-based task because she felt that the task should not be hurried. Success in student demonstration lessons would rely on student success in identifying and using hardware and peripherals. Student performance was recorded on the checklist (see Appendix D) in each student's practicum notebook.

Weeks 2 and 3.

The final 5-day lesson plan documents were completed, evaluated, and handed back to students who would be using one of those lessons for demonstration purposes. Later, documents would be collected and placed in the student's permanent file.

Since the reading and language arts classes met 2 hours twice a week, two students taught his or her lesson during each class session. Four class days (2 weeks) were needed for seven students. The writer

videotaped each lesson.

Week 4.

Students met individually with the writer for their final assessments of the written plans and demonstration lessons and discussed student responses in the log in/journal notebook regarding the process of lesson planning focused on technology. Because students were encouraged to express their feelings in their journal entries during the practicum, the writer looked for attitude changes and problem-solving strategies. These were also topics of discussion during conferences. Students seemed proud of their accomplishments.

Month 4: Week 1.

This was wrap up week with lab assistants and college administrators. For the final report, the writer discussed practicum implementation and results. She also made available student portfolios which contain log in/journal notebooks, written lesson plans, and videotaped lessons. To college administrators she is now prepared to report progress made in the practicum, feeling confident that they will look favorably upon the possibility of new requirements in technology education and provide more equipoment and personnel to do the job well.

The writer collected all borrowed software from the technology lab and returned it. Practicum portfolios were filed with the students' permanent records.

CHAPTER V

RESULTS, DISCUSSION, AND RECOMMENDATIONS

Summary of the Problem

In this practicum setting, early childhood preservice teachers had not been putting any kind of computer technology in their language arts methods and reading lesson plans. Their lesson preparation and demonstration lessons need updating so that these teachers will be on the cutting edge of the new information age. Because they are seeking certification in kindergarten through grade five, they must be better prepared to meet the needs of children who are energetic and need to be challenged with state-of-the-art methods of learning in a meaningful context.

Most of the problem resided in the preservice teacher's need for (a) shedding outdated notions of peers and inservice teachers about technology taking over the human element of teaching, (b) gaining accessibility to and knowledge of software, hardware, and peripherals, and (c) receiving instruction and guidance in developing content-specific lessons plans since the education division offered neither courses nor workshops on technology relating specifically to teacher education. The goal of the practicum was that they demonstrate the use of high quality, developmentally-appropriate technology in their 5-day unit lesson plans and transfer those skills to their field experiences.

Results

The solution strategy utilized in this experience was, first of all, aimed at maintaining a positive climate in the technology lab for practicum instruction and implemention. The writer and lab assistant worked alongside each student a minimum of 2 hours each week for the first half of the practicum. The writer then gradually moved into the distance, functioning as facilitator and assisting students only when there were questions about lesson plan content.

The following outcomes were projected:

Outcome 1: Each of the seven practicum participants will know how to evaluate three pieces of developmentally-appropriate language arts software for students in grades K-5. This outcome was not met. Six of the seven students met the expected outcome.

Outcome 2: Each of the seven students will be able to demonstrate use of all six kinds of computer hardware and peripherals. Because the FAX/Modem was never installed in the lab, this outcome was not met. Every student was able to demonstrate use of the other five pieces of equipment listed in Appendix D.

Outcome 3: Each of the seven students will spend at least 2 hours weekly in the technology lab and show evidence of attendance in the individual log in/journal notebook in which also they will record their comments concerning each day's accomplishments and their feelings about the quality of work and its transfer to the classrooms of K-5 students. Beginning the second

month and continuing through the third month, second week, they will develop their 5-day unit lesson plans. At least two of these daily plans must show technology infusion. These lessons plans must score "average" or "above average."

Both parts of this outcome were met. Students logged in at least 2 hours of lab work each week and wrote brief narratives about their lab experiences. Entries in student journals also reflected their "up-down" moods. The writer needed to know this because she wanted to maintain a non-threatening lab environment and develop a high level of morale. Technology infusion is indicated in Table 1.

Outcome 4: To college peers each of the seven students will teach one of the two 5-day unit plan lessons which require technology infusion. Each student must score "average" or "above average." This outcome was met (see Table 1).

Outcome 5: Each of the seven preservice teachers will submit to the practicum writer a developmentally-appropriate and content-specific 5-day unit plan. The plan must be prepared for a class of students in kindergarten, first, second, fourth, or fifth grade. In addition, each practicum participant will provide the writer a video tape of one demonstration lesson from his or her unit taught to college peers. These documents will be evaluated and made available for authorized and interested college personnel to view. Outcome 5 was met.

Table 1.

Infusion of Technology

N=7

Student	In Written Lesson Plan		In Demonstration Lesson	
	Days	Quality of Achievement	Day	Quality of Performance
1	1 and 3	average	3	average
2	2 and 3	above average	3	above average
3	3 and 5	above average	5	above average
4	4 and 5	average	5	average
5	3 and 4	above average	4	above average
6	4 and 5	above average	5	above average
7	3 and 4	above average	4	above average

Discussion

Three of the five outcomes were met in this small group of students whose backgrounds and learning styles are diverse. With regard to Outcome 1, student No. 4 completed only one of the three software evaluation forms. Even with the writer's help she still seemed totally confused. The student either forgot, was afraid, or did not want to attempt the other two forms. The writer should have been aware of this early in the practicum and given the student more assistance.

While employed as a paraprofessional, student No. 4 had worked with learning disabled students. Her desire was also to become certified in some area of special education. Because Manning (1994) cautions that "the

influence of microcomputers on the teaching of students with learning disabilities is extensive" (p.159), the writer made sure this student understood the importance of using appropriate software for any young learner but especially the disabled. She urged the student, as a novice, to seek assistance in the field to determine what software is developmentally-appropriate and what is not.

The lab coordinator was unable to have the FAX/Modem installed during implementation of the practicum since all funds provided by the technology grant had been depleted. Had this peripheral been available, the writer feels that Outcome 2 would have been met.

Allowing students several weeks to practice using the peripherals before the writer set up stations for student assessment was helpful. The practicum was designed to foster positive attitudes about using technology in lesson planning and teaching. Students were all but guaranteed success in becoming proficient users of the hardware provided.

The most stressful part of the practicum was meeting Outcome 3. This was the creative phase which demanded high levels of thinking and decision making. In their research, Reed and Palumbo (1992) observe a powerful link between one's language competency and ability to solve problems. The majority of these practicum participants were having problems with spoken and written language. The fact that most of them were the first generation in their families to attend college partially explained why this was such a stressful

phase of the practicum. It was not easy for the practicum writer to know how much assistance to give and how much to withhold. The writer planned a field trip at this point because she felt that visiting a primary school would give students a needed dose of enthusiasm. For lesson plans, she also suggested they get ideas for objectives during field experiences with learners in grades K-5. They did, and for two students, this created a surprising spin off. Their inservice teachers became "hooked" on the idea of trying out their dust-covered software in their own lesson plans. This collaborative effort between preservice and inservice teachers was valuable.

In addition, students' brainstorming among their peers and the writer's modeling with a demonstration lesson helped move this phase of the practicum in a positive direction. Practicum participants were encouraged to examine basal readers and language arts kits in the curriculum lab.

Meeting Outcome 4 was fairly easy since students had done such a good job planning and writing their lessons. Teaching before the video camera and to their peers was the hardest part, they admitted. The classroom is adjacent to the technology lab; therefore, students were able to teach part of their lessons in the classroom and then with ease move to the lab for the rest. Every student developed the technology teaching component of their lessons without any problems.

All learners should be taught ongoing self-evaluation. From the planning stages of their course work to the final sharing of it, these education majors

posed many questions and elicited comments about their direction, progress, and trouble spots. They were constantly evaluating their decisions, mostly through trial and error, and seeking feedback from the practicum writer.

Therefore, Outcome 5 was successful because students had responded to reflective questions such as, "What did you like best about the technology application in your lesson plans?" or" If you could change one thing about the lesson, what would it be?" Evaluation of student work was not taken lightly. According to Myers and Myers (1995), "teachers of the 1990s are expected to enforce strict academic performance standards for students; if they shy away from the task of evaluation, they may be considered weak or contentious" (p. 566). Formative and summative evaluations were done strictly and seriously. Learning how to choose developmentally-appropriate language arts software, how to use computer hardware with comfort and ease, and how to make learning more exciting and meaningful with technology applications elicited satisfying remarks from students and the practicum writer in the final assessment.

Recommendations

The following recommendations can be utilized in the writer's workplace:

1. All methods courses should require technology applications in their 5-day unit plans.

2. A technology workshop should be provided for all education professors once a year. Inservice teachers could be invited to participate.

3. The FAX/Modem should be installed, other equipment should be updated periodically, and new technology trends should be presented.

4. The technology lab should provide not only a larger language arts inventory but also add to its math, science, and social studies inventories. This should be done to support Recommendation 1 above.

5. The field experiences handbook for methods courses should indicate that inservice teachers allow every preservice teacher time to teach at least one lesson using technology during their 8-week experiences each quarter.

Dissemination

The writer plans to present the practicum at the Georgia Educational Technology Conference in Columbus in the spring of 1996. The conference likes to include college professors' ideas in its concurrent sessions. Media specialists and inservice teachers would also benefit from such a presentation.

Because the practicum focuses on teaching the language arts, it would be suitable for presentation at the annual Georgia Children's Literature Conference in May of 1996. This kind of presentation would hold the attention of college professors, elementary school media specialists, and public librarians who attend this 3-day meeting in great numbers.

References

Anderson-Inman, L., Horney, M. A., Chen, D., & Lewin, L. (1994). Hypertext literacy. Observations from electro-text project. Language Arts, 71, 279-287.

Bachtel, D. C. (Ed.). (1993). The Georgia county guide. (12th ed.). Athens, GA: The University of Georgia Cooperative Extension Service.

Bakker, H. E., & Piper, J. B. (1994). California provides technology evaluations to teachers. Educational Leadership, 51(7), 67-73.

Betts, F. (1994). On the birth of the communication age: A conversation with David Thornburg. Educational Leadership, 51(7), 20-23.

Bosco, J., Byrne, M. Dunlap, D., Gollnick, D., Rusche, P., Tucker, S., & Uhlig, G. (1987). The challenge of electronic technologies for colleges of education. Journal of Teacher Education, 38(6), 25-29.

Budin, H. Kendall, D. S. & Lengel, J. (1986). Using computers in the social sciences, New York: Teachers College Press.

Curtin, P., Cochrane, L., Avila, L., Adams, L., Kasper, S., & Webbena, C. (1994). A quiet revolution in teacher training. Educational Leadership, 51(7), 77-80.

Hannaford, M. E. (1988). Teacher attitudes toward computer use in the classroom. Report IR 013-407). Seattle, WA: Annual Meeting of the Pacific Northwest Research and Evaluation Conference of the Washington Educational Research Association. (ERIC Document Reproduction Service No. ED 296 721).

Harrington, H. L. (1993). The essence of technology and the education of teachers. Journal of Teacher Education, 44(1), 5-15.

Heppell, S., Davis, N., Alderson, G., Heppell, C., Coultas, I., Higgins, C., & Govier, H. (1991). Training better but investment still inadequate. Times Educational Supplement, 3915, 30.

Hill, M., & Hess, K. (1991). Using computers: Directed experiences in teacher preparation. Phi Delta Kappan, 73(1), 92-93.

Kurzweil, R. (1993). The futurcast. Library Journal, 118(11), 49-50.

Manning, C. D. (1994). Learning disabilities. In N. G. Haring, L. McCormick, & T. G. Haring (Eds.), Exceptional children and yourth: An introduction to special education (pp. 114-164).

Moore, M. A. (1991). Electronic dialoguing: An avenue to literacy. The Reading Teacher, 45, 280-286.

Myers, C. B., & Myers, L. K. (1995). The professional educator: A new introduction to teaching and schools. Boston: Wadsworth Publishing Company.

Nicklin, J. L. (1992). Teachers; use of computers stressed by education colleges. The Chronicle of Higher Education, 38(43), 15.

Piper, J. S. (1994). Purchasing priorities: Selection of technology resources. Media & Methods, 30(3), 16-17.

Prince, A. T. (1983). The ghost of computers past, present, and future: Computer use for preservice/inservice reading programs. (Report No. CS 007 493). Sarasota, FL: Annual Meeting of the American Reading Forum. (ERIC Document Reproduction Service No. ED 239 242)

Reed, W. M., & Palumbo, D. B. (1992). The effect of basic instruction on problem solving skills over an extended period of time. Journal of Educational Computing Research, 8, 311-325.

Rodrigues, R. J. (1983-84, Winter). Computer program models for teacher education. Action in Teacher Education, 5(4), 15-21.

Rose, D. H., & Meyer, A. (1994). Focus on research: The role of technology in language arts instruction. Language Arts, 71, 327-329.

Schrum, L. (1991). Teacher education goes online. Educational Leadership, 48(3), 39-42.

Spencer, S. (1994). Tech workshops: Reaching many educators. Media & Methods, 30(4), 10.

Turner, J. A. (1989). Teacher-training colleges' slow move to computers blamed for schools' lag in integrating technology. The Chronicle of Higher Education, 35(45), 9.

APPENDIX A

COVER LETTER FOR TECHNOLOGY SURVEY

Appendix A

TECHNOLOGY SURVEY COVER LETTER

November 21, 1994

Dear Early Childhood Major:

I am circulating a technology survey for early childhood majors in the education program here at the college in order to begin my minor practicum assignment with Nova Southeastern University where I am a doctoral student.

As you see, the survey asks for information concerning your knowledge of computers and peripherals as well as your attitude about using technology for classroom instruction. Let me clarify the term "non-traditional" under the heading TYPE OF STUDENT at the top of the first page. This means any student who did not enroll full time in college the year of his or her high school graduation.

As soon as I tally results of the survey, I will post a notice on the student announcements bulletin board inviting you to talk with me about the results if you wish.

I am grateful for your help.

Sincerely,

Melba S. Claxton

Melba S. Claxton
Assistant Professor of Education

APPENDIX B

TECHNOLOGY SURVEY FOR EARLY CHILDHOOD EDUCATION

Appendix B

TECHNOLOGY SURVEY
for
EARLY CHILDHOOD EDUCATION MAJORS

Please indicate the most appropriate answers to describe yourself at the present time.

I. Check one response in each category below.

ACADEMIC STATUS	TYPE OF STUDENT	COMPUTER OWNERSHIP
sophomore _____	non-traditional _____	Do you own a personal computer?
junior _____	traditional _____	
senior _____		yes_____ no _____

II. Circle one number for each item below to indicate your technology literacy.

		none	below average	average	above average	par excellence
A.	COMPUTER HARDWARE AND PERIPHERALS EXPERIENCE					
	1. microcomputer	1	2	3	4	5
	2. CD-ROM	1	2	3	4	5
	3. printer	1	2	3	4	5
	4. scanner	1	2	3	4	5
	5. FAX/Modem	1	2	3	4	5
	6. liquid crystal display panel (LCD panel)	1	2	3	4	5
B.	COMPUTER APPLICATIONS					
	1. My knowledge of software suitable for grades P-5	1	2	3	4	5
	2. My ability to evaluate software for grades P-5	1	2	3	4	5
	3. My ability to integrate computer exercises into my written lesson plans	1	2	3	4	5
	4. My ability to use computer hardware and software in my demonstration lesson plans	1	2	3	4	5
	5. My ability to use computer peripherals in my demonstrations lessons	1	2	3	4	5

(next page, please)

Appendix B

TECHNOLOGY SURVEY
for
EARLY CHILDHOOD EDUCATION MAJORS

III. Circle one number for each item to indicate your attitude concerning computer-assisted instruction.

A. ATTITUDE ABOUT COMPUTER-ASSISTED INSTRUCTION	none	very little	to some degree	significant degree	highly significant degree
I believe that the computer can					
1. help students learn content material.	1	2	3	4	5
2. help students practice specific skills.	1	2	3	4	5
3. challenge gifted students.	1	2	3	4	5
4. enhance remedial instruction	1	2	3	4	5
5. provide enrichment for all students	1	2	3	4	5
6. help students develop better problem-solving skills.	1	2	3	4	5
7. help students develop a high order of thinking skills.	1	2	3	4	5
8. help students improve their reading, writing, speaking, and listening skills.	1	2	3	4	5
9. make the classroom teacher's job easier.	1	2	3	4	5

APPENDIX C

COMPUTER SOFTWARE EVALUATION FORM

Appendix C

SOFTWARE EVALUATION FORM
Developed for
Nova University - Program in Child and Youth Studies

TITLE: _____

VENDOR: _____

SUBJECT AREA: _____

TOPIC: _____

GRADE LEVEL: _____

INSTRUCTIONAL TECHNIQUE:

Drill/Practice	____	Problem Solving	____
Tutorial	____	Simulation	____
Game Format	____	Other	____

HARDWARE REQUIREMENTS:

IBM ____ APPLE ____
1 DRIVE: ____ 2 DRIVES: ____ HARD DRIVE/NETWORK: ____

PERIPHERAL EQUIPMENT REQUIRED:

NO: ____

YES: (List:) _____

_____

DOCUMENTATION INCLUDES:

	Check One:
INSTRUCTOR'S GUIDE:	Y ___ N ___
STUDENT GUIDE:	Y ___ N ___
INSTRUCTIONAL OBJECTIVES:	Y ___ N ___
OPERATING INSTRUCTIONS:	Y ___ N ___
PRE-TEST:	Y ___ N ___
POST-TEST:	Y ___ N ___
MANAGEMENT OPTIONS:	Y ___ N ___
RECORD KEEPING OPTIONS:	Y ___ N ___
FOLLOW-UP ACTIVITIES:	Y ___ N ___

EVALUATION SCORE (from next page): ___ ___

COMMENTS:

Appendix C

PROGRAM EVALUATION

Check One:

1. CONTENT OF PROGRAM:
   - Content is accurate. Y___ N___ N/A___
   - Program uses unique computer capabilities. Y___ N___ N/A___
   - Content is appropriate to stated grade level. Y___ N___ N/A___
   - Content is appropriate to curriculum. Y___ N___ N/A___
   - Content presentation is clear and logical. Y___ N___ N/A___
   - Content achieves defined objectives. Y___ N___ N/A___

TOTAL #1: Y___ N___ N/A___

2. PRESENTATION OF CONTENT:
   - Program is free of violence. Y___ N___ N/A___
   - Program is free of stereotypes. Y___ N___ N/A___
   - Program provides appropriate feedback. Y___ N___ N/A___
   - Reinforcement is both appropriate and varied. Y___ N___ N/A___
   - Program contains self-testing options. Y___ N___ N/A___
   - Program has record-keeping options. Y___ N___ N/A___
   - Program can be individualized by instructor. Y___ N___ N/A___
   - Program stimulates student interest and creativity. Y___ N___ N/A___
   - Program appears to motivate increased time-on-task. Y___ N___ N/A___
   - Presentation uses computer to good advantage. Y___ N___ N/A___

TOTAL #2: Y___ N___ N/A___

3. VISUAL APPEARANCE:
   - Screen displays are uncluttered and easy to read. Y___ N___ N/A___
   - Material is free of spelling/grammatical errors. Y___ N___ N/A___
   - Graphics are used appropriately. Y___ N___ N/A___
   - Sound is used appropriately. Y___ N___ N/A___
   - Input from the keyboard is clearly prompted. Y___ N___ N/A___

TOTAL #3: Y___ N___ N/A___

4. PROGRAM OPERATION:
   - Help or review screens are available. Y___ N___ N/A___
   - Exit options are available. Y___ N___ N/A___
   - Speed and sequence of presentation are controllable. Y___ N___ N/A___
   - Operation requires a minimum of instruction. Y___ N___ N/A___
   - Program is menu-driven. Y___ N___ N/A___
   - Program is reliable in normal use. Y___ N___ N/A___
   - Program can be used in a regular classroom. Y___ N___ N/A___

TOTAL #4: Y___ N___ N/A___

SUMMARY: (Transfer your totals from categories 1 through 4 above.)

1. CONTENT OF PROGRAM:	Y___	N___	N/A___
2. PRESENTATION OF CONTENT	Y___	N___	N/A___
3. VISUAL APPEARANCE	Y___	N___	N/A___
4. PROGRAM OPERATION	Y___	N___	N/A___
TOTALS:	Y___	N___	

EVALUATION SCORE: Y___ minus N___ = ____

APPENDIX D

CHECK LIST FOR HARDWARE AND PERIPHERALS

Appendix D

Check List for Hardware and Peripherals

Name _____Date_____

Type of Hardware and Peripherals	Task Completed	Teacher's Comments
1. microcomputer	yes no	
2. CD-ROM	yes no	
3. printer	yes no	
4. scanner	yes no	
5. FAX/Modem	yes no	
6. LCD panel	yes no	

APPENDIX E

LOG IN AND JOURNAL SHEET

Appendix E

Log In and Journal Sheet

Student's Name_____ Date_____

Time in:_____ Time out:_____

Kind of Work Student Did Today:_____

_____

Lab Assistant's
Verification (Please sign using your initials.) _____

_____

First, write comments about what you accomplished today. Then, tell how you feel about today's work in the technology lab

APPENDIX F

CHECK LIST FOR INFUSION OF TECHNOLOGY IN LESSON PLANS

Appendix F

Checklist for Infusion of Technology In Lesson Plans

Student's Name_____Date_____

Technology Applications in Two Written Lesson Plans

1. Day Number 1, 2, 3, 4, 5 Yes No Average Above average

2. Day Number 1, 2, 3, 4, 5 Yes No Average Above average

Comments: _____

_____

_____

Technology Applications in One Demonstration Lesson

Date Student Taught Lesson_____Number of Minutes_____

Lesson Number_____ Level of Performance: Average Above average

Type of Application_____

_____

Comments:_____

_____

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